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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/719,580	03/09/2001	Yoshiki Nakagawa	1581/00234	2233

7590 03/21/2003

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EXAMINER

ZALUKAEVA, TATYANA

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 03/21/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/719,580

Applicant(s)

NAKAGAWA ET AL.

Examiner

Tatyana Zalukaeva, Ph.D

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 20-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17, 20-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. Applicants' amendment has overcome second paragraph of 35 U.S.C. 112 rejection, and the rejection is withdrawn.
2. Applicants amended claims 19-21 and 22-24 to overcome objections under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claims 5, 6, 7 and 8 respectively.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1-6, 9-13, 17, 20-22, 24-36 stand rejected under 35 U.S.C. 102(b) as being anticipated by EP 0261 942.

EP'942 discloses a branched polymer obtained by polymerization of vinyl polymer, which is in turn made by a radical polymerization as a macromonomer having one polymerizable double bond per molecule at the terminal, wherein the monomeric units comprise acrylates, acrylic acid, styrene, acrylonitriles, etc. The formula of a macromonomer is presented on page 2, lines 30-55 (see also abstract). Most preferred for commercial applications macromonomers have 100-500 units (page 3, lines 20-25). The concentration of a macromonomer in a composition is at least about 15 mol%. (page 3, lines 60-65). The macromonomer composition of EP'942 is prepared by polymerization process employing specific cobalt chelates as chain transfer agents (page 4, lines 10-15). The polymerization to obtain a macromonomer is carried out in a

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presence of conventional free radical initiator employing any known methods of polymerization (page 6, lines 20-35).

The macromonomers of EP'942 are useful to produce graft polymers which are useful in coating and molding resins , etc. (page 12, lines 25-37). Example 4 on page 8 provides for a polymer having Mw/Mn 1.63, that read on the limitation of the instantly amended claim 1.

5. Claims 1, 13-15 stand rejected under 35 U.S.C. 102(b) as being anticipated by JP 50-150,793.

JP'793 discloses comb type block copolymer prepared by copolymerising reaction products of polyalkyl methacrylate and unsaturated acid chloride(s) with hydrophilic monomers. Such butylmethacrylate was emulsified and in the presence of . H₂O₂. and reacted with methacrylchloride. The reaction product and hydroxyethylmethacrylate were dissolved in 14 ml dimethylformamide, and polymerised in hexane transparent cast film copolymer.(see abstract).

6. Claims 1-8, 10-13, 17, 20-24, 29-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Matyjaszewski et al (5,807,937 or 5789487).

Matyjaszewski discloses process of **living atom (or group) transfer radical polymerization** for the synthesis of novel homopolymer or a **branched polymer** .

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Several Pst macromonomers containing polymerizable double bonds can be obtained in a controlled manner (Table 11). The NMR spectrum of Polystyrene initiated with vinyl chloroacetate in the presence of 1 molar of CuCl and 3 molar equivalent of bipy at shows signals assigned to vinylic end-groups.

Matyjaszewski'937 discloses a **macromonomer** that is used in the presence of a vinyl monomer, a transition metal compound, and a ligand to form a branched copolymer, exhibiting a well defined molecular architecture. The term "macromonomer" refers by Matyjaszewski' to a macromolecule having **at least one polymerizable site**.

In addition, the term "living" initiating moiety (anionic, cationic or radical) refers to an initiating moiety that substantially does not undergo termination reaction and thus, polymerization continues until substantially all the monomer is exhausted.

Examples of Matyjaszewski'937 include (but are not limited to) ATRP of p-chlorosulfonylstyrene, vinyl chloroacetate, with styrene, etc.,

which result in macromonomers with vinyl acetate(VAc), **branched** structures possibly with p-chlorosulfonylstyrene.

Initiation, that is the activation of a halide functional group and addition of a monomer, is fast. Fast initiation results in the formation of polymer chain (propagation) with vinyl end groups which can be incorporated into other polymer chains (branching). The rate of chain incorporation depends upon the $r_{sub.1}$ and $r_{sub.2}$ values for the respective monomer and the polymerizable chain-end functionality on the macromonomer.

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The transition metal catalysts are used for polymerization, including but not limited to iron, nickel, ruthenium and copper, wherein copper is a preferred metal (column 10, lines 64). This meets the limitations of the instant claims 6-8, 22-24

Particular scheme for producing branched polymers in the presence of copper based catalyst is presented in column 22, lines 52-65, column 23, lines 1-35). Macromonomers usually have low polydispersity index, such as 1.6 (column 23, line 62) for macromonomer of butyl acrylate-2,2-bromopropionoxy ethyl acrylate, which is used for ATRP of styrene. This reads on the limitations of claim 18.

7. Claims 13 –16, 25-28, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matyjaszewski' 487 or 937

Although Matyjaszewski provides the macromonomers having functional groups as per instant claims he does not specify how those monomers are obtained, although generically teaches polymer analogous reactions, which lead to the terminal functional macromers.

However, a person skilled in the art would have found it obvious to employ conventional methods of polymer analogous modifications in order to obtain the macromonomers identified by Matyjaszewski. Furthermore, it is settled by the courts that a "new" process may still be obvious even when considered as a whole, notwithstanding that specific starting material or resulting product or both or the method of their making is not found in the prior art, In re Durden, JR (226 USPQ 359 (CAFC 1985

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Response to Arguments

8. Applicant's arguments filed January 14, 2003 have been fully considered but they are not persuasive. With regard to rejections over EP'942 Applicants' arguments reside in contention that EP'942 does not suggest that polymerization of macromonomer is conducted in a manner of living radical polymerization.

In response to this it is noted:

a) Claims 1-3, 9-13, 17 do not recite "living polymerization". Therefore, Applicants' arguments are more specific than the claims.

b) With regard to claims that do recite the living character of polymerization, the definition of "living polymerization" from Polymer Technology Dictionary" is the following: "Living polymer... A polymer which is still capable of further polymerization". This reads on the macromonomers of EP'942.

There is no argument provide by Applicants with regard to JP'793.

Applicants recite several case laws emphasizing that each and every reciatation should be anticipated by the references in order to impose 102 rejection.

In response to this, Applicants are advised that the identity required for anticipation is between the claimed subject matter and the subject matter disclosed by the reference; identity does not require the reference to disclose the same subject matter as described in the specification. See **Kalman vs. Kimberly Clark Corp.** 218 USPQ 781 (Fed. Cir.1983). And furthermore, a reference anticipates a claim, if it discloses the claimed invention such that a skilled artisan could take this teaching in

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combination with his own knowledge of the particular art and be in possession of the invention, as per *In re Graves*, 36 USPQ 2d 1697 (Fed. Cir. 1995), or *In re Sasse*, 207 USPQ 107 (CCPA 1980).

Needless to add that the disclosure in a reference must show the claimed elements arranged as in the claim, but need not be in identical words as used in the claim to be anticipatory. *In re Bond*, 15 USPQ 2d 1566 (Fed. Cir. 1990).

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tatyana Zalukaeva, Ph.D whose telephone number is (703) 308-8819. The examiner can normally be reached on 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (703)308-24-50. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

TATYANA ZALUKAEVA
PATENT EXAMINER



March 14, 2003

Tatyana Zalukaeva, Ph.D
Primary Examiner
Art Unit 1713